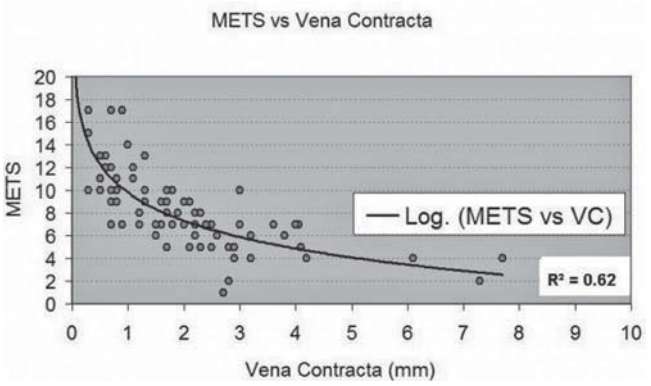
Conclusion: In patients with CAD and inferior wall motion abnormality, MR impacts negatively on exercise capacity and is associated with increased cardiovascular morbidity and mortality. This effect appears independent of degree of LV dysfunction.



Determinants of functional capacity

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New findings in mitral valve prolapse related to filamin-A mutations

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Objective: Filamin-A (FlnA) is the first identified gene (chromosome X) for non-syndromic mitral valve dystrophy. We aim to assess the overall mitral valve phenotype by echocardiography in male and female patients from a large P637Q FlnA mutation family.

Methods: Thirty-six patients over 10 year old (41±16 years, 12 males) with the P637Q FlnA mutation were matched with 18 control subjects. Six additional patients under 10 year old were also examined.

Results: In male patients both anterior (AL) and posterior (PL) mitral leaflets were elongated (AL: 25.1±3.2 vs 21.6±2.8 mm in controls, P=0.03; PL: 17.8±3.9 vs 12.3±0.9 mm, P=0.001), thickened (leaflet tip: 3.7±1.1 vs 1.8±0.4 mm, P=0.0002) and moderately billowed in the left atrium (AL: –1.1±3.4 vs +3.2±2.2 mm; PL: –2.6±2.5 vs +4.0±2.7 mm, P<0.0005). Anterior and posterior chordal lengths did not differ significantly with controls but both anterior (APM) and posterior (PPM) papillary muscles were positioned closer to the mitral annulus as assessed by the mitral annulus-PM distance to the LV long axis length ratio (APM: 27±5 vs 34±4%, P=0.01; PPM: 28±8 vs 34±3%, P=0.03). In female patients lesions were minored as expected in an X-linked disease. Mitral annulus enlargement was present only in males. No chordal rupture was seen in any patient. In male and female patients mitral valve dystrophy is unique associating also a doming aspect in diastole with a restrictive motion predominant on the posterior leaflet. Finally, mitral valves lesions were also clearly identified in younger patients (3 to 7 year old) particularly in males.

Conclusions: The phenotype of FlnA-related mitral valve dystrophy associates mitral leaflet elongation, thickening and billowing with a moderate diastolic doming aspect or restrictive motion, predominant on the posterior leaflet. Papillary muscle position is displaced closer to the mitral annulus. Mitral lesions are minored in females as expected in an X-linked disease.

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Prediction of the left ventricular ejection fraction after surgery of organic mitral regurgitation

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Objectives: This study analyzed the association between pre-operative rest and exercise echocardiography and the 6-month post-operative left ventricular ejection fraction (LVEF) in organic mitral regurgitation (MR).

Background: LV end-systolic diameter is the marker of LV function in patients with organic MR associated to survival and post-operative EF, but still some patients have nowadays a depressed post-operative LV EF despite correct diameters.

Methods: 88 patients (62.6±1.4 yo) were prospectively recruited. They all got a sub-maximal (to perform a complete echocardiography at rest and at 110±10/min) exercise stress echocardiography before the MR repair and all had an echocardiography at 6-month after-surgery. Exclusion criteria were: coronary artery disease, other organic valvular disease, uncontrolled arrhythmia, hemodynamic instability.

Results: The principal parameters correlated to post-operative LVEF (0.5±0.08) are displayed in table I. using a multivariate linear regression, the global longitudinal strain recorded during the exercise (–20.6±0.5%; p<0.0001), the GLS/LV end-systolic volume (–4.6±0.3; p=0.04) and the left atrial diameter (44.7±0.8 mm; p=0.01) were the best predictor of post-operative LVEF (R^2=0.48).

Conclusions: In organic MR, LV end-systolic diameter is a key parameter to propose surgery. We demonstrated that global longitudinal strain (GLS, %) recorded during a sub-maximal exercise and this GLS normalized for the end-systolic volume at rest are, with the LA size, important determinant of post-operative EF.

Table – Main results

	mean±SE	R (Pearson)	p-value
LV end-systolic diameter (mm)	36±0.7	–0.34	0.009
Left atrial area (cm^2)	26.4±1.0	–0.37	0.011
LV end-diastolic volume (ml)	149.9±5.2	–0.31	0.019
LV end-systolic volume	52.3±2.5	60.35	0.003
Mitral annulus diameter (mm)	37±0.7	–0.25	0.01

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Mitral valve repair: evolution of the "Respect but not Resec" technique: minimally invasive chordoplasty (new technical variant). Experience in 70 patients

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Mitral valve repair is currently evolving. The "respect but not resect" strategy becomes the standard technique with implantation of artificial chordae . Limitation can occur with technical complexity for evaluation of chordae length. The use of surgical and visual criteria allow extension of ability to achieve that ending point.

Surgical procedure is standardized. Minimally invasive video is our routine approach. After assessment of mitral lesions; artificial chordae are inserted in the papillary muscle as much as needed. Then we insert the prosthetic ring to determine the mitral annulus. This will be the referring plane for repair. Third, instead of suturing the free edge of posterior leaflet with chordae and lowering it toward the papillary muscle we lower it to annulus by a double stitch suture. That allows us to modulate with direct viewing the posterior leaflet's height. This creates a very large coaptation zone which plays a role in long-term results. A video explain the technique.

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